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ABSTRACT

This narrative report on the development phase of the Program on Man, Technology, and Society (MTS), which was established at Saint Louis University in 1974 with the aid of a 5-year curriculum development grant, provides an overview of the original plan and a survey of the program as now established, with an analysis of the extent to which MTS, as originally conceived and proposed, is now successfully operational. Fourteen departments at the University participate in the multidisciplinary MTS Program which has a curriculum of over 50 courses. Students select six to eight appropriate courses to earn a certificate in one of four areas: (1) Technology Studies; (2) Technology, the Future, and the Dynamics of Change; (3) Technology and Human Health; and (4) Technology, Communications, and Culture. A response to the recommendations of the NEH site visit team, which was on campus in the fall of 1979, and a prospectus for the future of the program conclude the report. Appendices listed in the table of contents are not included. (Author/LLS)

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FINAL REPORT

OF THE

PROGRAM ON MAN, TECHNOLOGY, AND SOCIETY

AT

SAINT LOUIS UNIVERSITY

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Since 1 September, 1975, the Program on Man, Technology, and Society at Saint Louis University has been supported by an Institutional Development Grant from the National Endowment for the Humanities, which expires 31 August, 1980. This is a final report on the development phase of MTS, as supported by NEH. As such it completes the series of annual reports begun in 1976. Readers desiring additional information about Program activities reviewed in this report are hereby referred to the original grant proposal and the annual reports, the tables of contents of which are attached as appendix R.

This final report includes an overview of the original plan for MTS and a survey of the Program as now established, with an analysis of the extent to which MTS, as originally conceived and proposed, is now successfully operational. The report concludes with a response to the recommendations of the NEH site visit team, which was on campus in the fall of 1979, and a prospectus for the future of the Program.

The Program on Man, Technology, and Society at Saint Louis University was established in 1974, after several years of planning supported by a pilot grant from the National Endowment for the Humanities and a summer workshop grant from the office of the Academic Vice President. The impetus for this type of planning came from a new statement of institutional philosophy, articulated by the University in 1971, calling for "contextual education" uniting "humanistic, ethical, and theological reflection with specialized technical knowledge, all for the purpose of responsible participation in society." Perceived deficiencies in the curriculum were also important factors in generating the planning for MTS.

When planning for MTS began, the curriculum of the College of Arts and Sciences required students to complete core requirements in specific departments and areas (e.g. history, philosophy, fine arts, natural science) and a major and a minor in traditional disciplinary areas (e.g. English, theology, sociology). Before planning for MTS was completed, the major/minor requirement was changed to a 50 hour area of concentration in either a traditional discipline or an approved area of thematic study (e.g. American Studies, Latin American Studies).

The curriculum was regarded as deficient in two respects. First, it did not provide an adequate means of truly integrating the core requirements. Second, it did not explicitly address the many issues surrounding the pervasive role of technology in modern

society. In particular, the traditional humanities disciplines did not collectively promote reflective consideration of what is clearly the defining characteristic of our culture: namely, a dependence on technology so great that it challenges and threatens to disrupt, for better or worse, all facets of human existence, including especially the traditional beliefs, values, and mores which, as our legacy from the past, have always been a central concern of traditional education in the humanities.

Also recognized as a pressing need by those involved in the early planning for MTS was a forum for faculty development, in particular, some effective way to encourage and to support teaching and research interests in interdisciplinary and multidisciplinary affairs. The increasing isolation of vested disciplinary interests from one another was regarded as a threat to quality undergraduate education. Within the College of Arts and Sciences especially, the University wanted to retard, if not reverse, the process whereby liberal arts faculty members themselves were becoming technical specialists in narrow, isolated fields. What was needed was a way of promoting a sustained, cross-disciplinary dialogue between faculty in the humanities disciplines and faculty in the social and natural sciences. It was anticipated that such a dialogue would enhance the reflective study of current issues and problems within the broad, integrative context of the liberal arts.

With all of the above concerns in mind, planning for MTS proceeded and was completed in 1974. Given the failure of the curriculum to address directly the character of technological

society, the choice of the "man, technology, and society" theme as a focus for curricular and faculty development was an obvious one. The resources and educational philosophy of Saint Louis University and, in particular, the College of Arts and Sciences, determined the specific design and details of the program that was to be built around the MTS theme.

In 1975 the University received from NEH a $500,000, five-year curriculum development grant for the implementation of the MTS plan for curricular and faculty development. Under a matching provision, NEH subsequently granted an additional $100,000, which was matched by $100,000 from the Monsanto Fund. The grant proposal described in detail the MTS Program, as originally conceived. There were two principal objectives: 1) the establishment of a new four-year curriculum with the MTS theme as the central, integrating focus and 2) the establishment of faculty workshops and seminars to promote dialogue across disciplinary lines and development in interdisciplinary and multidisciplinary affairs.

The Program was to be directly administered by a full-time director and a part-time assistant director. They were to coordinate the activities of (and be included in) a core faculty, composed of representatives from the traditional humanities disciplines, the social sciences, and the natural sciences, all with some released time from departmental appointments and teaching assignments to develop and to implement the Program. An advisory board of distinguished faculty was also to be established to offer general advice, counsel, and direction.

The curriculum of the Program was to be built by the core faculty members, all chosen for their teaching interests in the MTS area, and other selected faculty awarded modest grants for the design of new courses and participation in a series of summer workshops. Three team-taught interdisciplinary courses, each for six hours credit, were to be established by the core faculty for students at the freshman and sophomore levels:

1) MTS 10: Cultural and Historical Perspectives: Man and Technology (team taught by an historian and a cultural anthropologist).
2) MTS 20: Man's Relation to Technology: a Contemporary Perspective (team taught by a theologian and a biologist).
3) MTS 30: Moral and Political Perspectives on Freedom and Authority (team taught by a philosopher and a political scientist).

A wide range of disciplinary courses was to be established at the junior and senior levels.

Students in the Program were to receive either a general certificate for the completion of 24 hours in the curriculum, including MTS 10, MTS 20, and MTS 30, or a special certificate for the completion of 18 hours of the junior and senior level courses. Students were also to have the option of choosing MTS as a thematic area of concentration, which would require the completion of both the general certificate and a special certificate plus at least eight more hours in a cognate area. It was anticipated that special

certificates would be offered in such areas as: Technology and Human Health; Technology and Culture; Technology and Human Values; and Technology and the Environment.

All of the certificate options within the Program were to provide students with a way of integrating the University core requirements around a significant central theme. Such thematic study was to augment and to enhance, not to replace or to compete with, areas of concentration in traditional disciplinary fields. It was expected, for example, that some students majoring in philosophy or theology would choose the Technology and Human Values certificate to supplement their disciplinary work and that some students majoring in such fields as history and sociology would choose the Technology and Culture certificate to supplement their disciplinary work.

Although projected student participation in MTS was difficult to estimate, it was anticipated that once the curriculum was fully developed 85% of the students in the College of Arts and Sciences would be exposed to the MTS theme by taking at least one course from the curriculum and that 60% would take at least two courses. It was also expected that a significant number would complete either the general certificate or one of the special certificates. Although housed in the College of Arts and Sciences, the Program was to be, to as great an extent as possible, University-wide, with courses and certificates available to students in other University colleges and schools, specifically Business and

Administration, Metropolitan (adult, evening), Nursing and Allied Health Professions, Parks (aviation and aeronautical engineering), Philosophy and Letters, and Social Work.

Throughout the five year development phase, faculty development was to proceed in tandem with the development and implementation of the new curriculum. There were to be three forums for faculty development: 1) regular meetings of the core faculty, all of whom, again, were to have some released time to work on new courses for the Program and, in some cases, related research, 2)a series of summer workshops for the core faculty and also four other instructors awarded grants each summer to develop new courses at the junior and senior levels, and 3) special University seminars for all interested faculty and students, featuring guest lectures on topics related to MTS. Funds for travel to relevant conferences and funds to build up the library's holdings in related areas were also important items in the plan to develop and to support faculty interest in MTS.

It was anticipated that the Program would require the addition of at most two new instructors in specialized areas, an historian of science/technology and a cultural anthropologist. All other faculty needed to develop courses for the Program were to be recruited from within the University, most, if not all, from within the College of Arts and Sciences. The objective was to redirect the teaching and in some cases also the research interests of principally faculty in the College of Arts and Sciences, not to hire additional faculty who already had such interests. The curriculum

was to be reformed and given a new direction without substantially expanding its size.

In addition to outlining plans for curricular and faculty development, the grant proposal to NEH also specified: 1) a plan for the active recruitment of students using such means as informational brochures and sessions with interested high school students, as arranged by the Office of Admissions, 2) a plan for evaluating the Program, which included inhouse evaluation by the core faculty and also evaluation by outside consultants, and 3) a schedule for implementation of the Program.

As originally conceived, MTS was an ambitious undertaking, to which the University committed significant resources, including released time for faculty and related overhead. Although similar to programs such as Values, Technology, and Society at Stanford University, the MTS Program was at its inception unique in terms of both the size of the curriculum that was to be established and the number of faculty who were to be involved.

Throughout the five year development phase, all attempts have been made to follow the plan and schedule of implementation outlined in the original grant proposal. However, some changes have been made, in some instances because implementation of the original plan was simply not possible, in others because the original plan was found deficient and changed accordingly. All changes have been made only after careful review by both the core faculty and outside consultants familiar with the Program.

As now established and fully implemented, the curriculum of MTS is much larger than originally anticipated. It includes fifty-one courses taught by thirty-seven instructors from thirteen participating departments: biology, communication, computer science, English, history, philosophy, physics, political science, psychology, social work, sociology/anthropology, theology, and urban affairs. Detailed descriptions of all of these courses are attached as appendix A. Thirteen of the courses have been developed by members of the core faculty. Eighteen more have been developed by those faculty awarded grants for participation in the summer workshops. All thirty-one (listed in appendix B) are either humanities courses or courses in the social and natural sciences that do address significant humanistic concerns. The twenty other courses that round out the MTS curriculum were selected for inclusion in the Program because of their relevance to the MTS theme. All fifty-one courses have been taught or will be in the coming academic year (see appendix C for MTS course offerings in the fall of 1980). We anticipate that all of these courses will be taught regularly, either once a year or once every two or three years in the case of very specialized courses.

In many respects the MTS curriculum is sounder than the curriculum originally envisioned. In particular it is exceptional with regard to breadth, addressing all of the MTS related issues discussed in the original grant proposal, especially those that have to do with values and ethical concerns. In one important respect,

however, the curriculum differs significantly from what was originally planned. It does not include MTS 10, MTS 20, and MTS 30.

MTS 30 was the only one of the freshman and sophomore level courses to be offered more than once, and then it too ran into the same difficulties that forced the cancellation of MTS 10 and MTS 20. The principal problem encountered was scheduling for the six hour block, and it proved to be insurmountable. Courses do exist that cover the issues that were to be addressed in MTS 10, MTS 20, and MTS 30, namely History 270 and Sociology 299, Biology 235 and Theology 355, and Philosophy 436 and Political Science 120. The sum of these parts is, nonetheless, less than the whole originally conceived, in terms of pedagogy and a truly interdisciplinary, team taught experience. The failure of MTS 10, MTS 20, and MTS 30 has been the major disappointment for those involved with the Program. And the lack of a broad, introductory course at the freshman level remains the major weakness of the Program.

As originally planned, most MTS courses do satisfy University core requirements in all participating departments, with the exception of history, where the requirement is now strictly six hours of Western Civilization. As originally anticipated, students do use the MTS certificate programs as a way of integrating eighteen to twenty-four hours of their core requirements around a central theme. However, most students do not enter the Program until their sophomore year. It has proved to be very difficult to recruit freshmen into the Program. They are understandably preoccupied

with working on their introductory core requirements, and that has compounded the problem of establishing a good interdisciplinary, introductory humanities course for MTS. Such a course would not satisfy any core requirement, unless the core requirements were changed to allow for the substitution of three hours in a general humanities course for three of the required hours in either English, history, philosophy, or theology. Our attempts to change the requirements have failed.

MTS 10, MTS 20, and MTS 30 were to be integral parts of the Program. Each of these courses was itself to be an integrative, interdisciplinary experience. The promotion of such an experience is still an overriding concern of MTS. Indeed, such an experience is, we believe, enjoyed by those students who complete one of the Program's certificates. The certificates, accordingly, are now a much more important part of MTS than originally planned. They are available in four areas: Technology Studies (24 hrs.); Technology and Human Health (18 hrs.); Technology, the Future, and the Dynamics of Change (18 hrs.); and Technology, Communication, and Culture (18 hrs.).

The general certificate in Technology Studies differs significantly from what was originally planned, largely owing to the cancellation of MTS 10, MTS 20, and MTS 30, which were to be its major components. As now established, this certificate has a broad range of concerns, including what is meant by technology and how it penetrates and alters the realms of nature and human relationships, whether personal, political, or social. The curriculum for Technology Studies, as outlined in appendix D with the other certificate

curricula, is particularly strong in humanities courses in English, history, and philosophy that focus on environmental matters and ehtical considerations arising from the role of science and technology in our culture. The Technology Studies certificate hence encompasses the concerns of two of the special certificates originally planned, Technology and Values and Technology and the Environment.

Technology, the Future, and the Dynamics of Change was the first of the special certificates to be implemented. Originally entitled simply Technology and the Future, the title of this certificate and also its curriculum were changed this year. The theme of the certificate has been broadened to include historical reflection on the dynamics of cultural change, as well as ways of anticipating future change through an analysis of and projection from the factors, technological and otherwise, that will interact with human agency to shape the future.

The Technology and Human Health certificate was established in 1977-78. From its inception it has been the most popular of the certificates, attracting students from the School of Nursing and Allied Health Professions, as well as the College of Arts and Sciences. The certificate encompasses a range of concerns related to health care delivery, including especially analysis of the many value questions and humanistic considerations to which modern medical techniques have given rise.

The last of the special certificates, Technology, Communication, and Culture, was also established in 1977-78. It is concerned

with the role of media in our culture and issues relating to the control and dissemination of information. It is more closely tied to a single department, Communication, than any other certificate. Its curriculum has, however, been successfully broadened over the past two years to include new courses from other departments, four of which, in history, modern languages, psychology, and sociology, have been developed in the last two summer workshops.

Students are free to choose the six to eight courses that they take to earn an MTS certificate. There are no required courses. Students are, however, encouraged and advised to include courses from a range of departments and to take courses developed and taught by the summer workshop participants and especially the core faculty. MTS certificates provide a vehicle for an integrative, interdisciplinary experience. The task of effecting the desired integration, of synthesizing the content and disciplinary perspectives of the individual courses, is left largely to the students themselves, which is, we feel, appropriate. To date they have responded well. Samples of certificates completed are included in appendix E.

The certificate program structure in MTS type programs (e.g., VTS at Stanford, NEXA at San Francisco State) is unique to Saint Louis University. Faculty in other programs to whom we have talked and with whom we have consulted, including representatives from VTS and NEXA, agree with us that it has several important advantages. Without such an intermediate structure, students either receive no

formal recognition for coursework completed in a thematic area or must choose to major in a thematic area. The latter option leads to direct competition with vested disciplinary interests, which can be fatal to any program struggling to establish iself. It also forces students to forego study in a disciplinary area, which is itself a valuable educational experience. MTS certificates provide formal recognition for coursework completed in the Program. But the certificates themselves do not compete with disciplinary majors. Instead they provide a way of enhancing study in a traditional discipline with a significant interdisciplinary component.

In addition to the four MTS certificate programs, the College of Arts and Sciences also houses interdisciplinary certificates in Afro-American Studies, Bilingual-Bicultural Education, Latin American Studies, and Russian and Eastern European Area Studies. A program in American Studies is now being planned. Dr. Dobney and Dr. Zetterberg have worked hard to increase the viability of all of these programs.

As a member of the Curriculum Committee of the College of Arts and Sciences, Dr. Dobney lobbied successfully for a change in the area of concentration requirement, which had included, in addition to 30-36 hours in the controlling department, 14-20 hours in a vaguely defined cognate area. The requirement, pending final approval, which seems assured, will now read 14-20 hours in either another discipline or a certificate program or approved area of thematic study. All certificate programs will benefit by this

change; they will now be a much more integral part of the curriculum of the College of Arts and Sciences.

Dr. Zetterberg has met over the last several years with the directors of the other certificate programs. In cooperation with them, he has, among other things, designed a certificate programs brochure for use by the Office of Admissions. In February of this year he proposed the establishment of a Center for Interdisciplinary Programs in Arts and Sciences, which would provide some support and funding, as well as increased visibility, for all of the certificate programs (appendix F). His proposal was well received by both the Dean of the College of Arts and Sciences and the Academic Vice-President, and it will be implemented next year, on an experimental basis. The Interdisciplinary Studies Office, as it is now called, will, in its first year, provide secretarial assistance for all of the programs, information for interested students, and, through a board of certificate program directors, a forum for the promotion of interdisciplinary activities. It may also, if funding is approved, sponsor summer workshops for faculty development, using the MTS workshops as a model, although such workshops are not included in the Office's budget for next year (see appendix G). Ms. Barbara Woods, who currently directs the Afro-American Studies Institute, has been chosen to direct the Interdisciplinary Studies Office, as well.

Through cooperation with and support of other certificate programs, MTS has established itself at the University as the leading voice of interdisciplinary interests. It is also now the largest interdisciplinary program on campus, with far more students

than any similar program and far more participating faculty.

It was estimated in the grant proposal to NEH that 85% of all students in the College of Arts and Sciences would take at least one course in the Program and that 60% would take at least two. As reported in last year's annual report, a computer analysis done in the spring of 1979 showed that in the spring semester of 1978, 41% of all students in the college were enrolled in an MTS course; in the fall semester of 1978, when fewer courses were offered, 31%; and in the spring semester of 1979, when, as is usual in the spring, more courses were again offered, 43%. Extrapolating conservatively from these figures, 70%-80% of students in the College are being exposed to the MTS theme in at least one course and 50%-60% in at least two. Forty-seven students either have earned certificates or are now working towards a certificate (see appendix H). Over thirty of these students have entered the Program in the last two years. The core faculty is aware of at least twenty other students who have taken three to five courses in the Program, but have not earned a certificate, many of them having not become interested until late in their junior or their senior year.

Although enrollment in MTS certificates is exceptional when compared with enrollment in other University certificates, it is barely adequate, as we judge it. We do anticipate, however, that the recent change in the area of concentration requirement and the new MTS Booklet, which is described below, will enable us to attract at least twenty new students into the Program next year. We would

like to reach an enrollment of one hundred, a figure that we regard as realistic, now that the Program is better known on campus and the curriculum complete.

MTS, although housed in the College of Arts and Sciences, has become a University Program. With rare exception, MTS courses are available to any student in Business and Administration, Nursing and Allied Health Professions, Philosophy and Letters, and Social Work. It has not been possible to offer any of the courses at Park College, which has a separate campus in Illinois, and only a few of the courses are available to Metropolitan College students. Several students in Business and Administration and Nursing and Allied Health Professions are currently enrolled in MTS certificates.

Approximately 30% of the Program's expenditures for direct costs has been used for such expenses as postage, teaching materials, office supplies, travel, the library budget, and secretarial assistance. The other 70% has been used to support faculty development, in particular to provide stipends for the director and assistant director, released time for the core faculty, stipends to the core faculty for their participation in the series of summer workshops, and grants to twenty other faculty for their participation in the summer workshops (a summary of budget expenditures is attached as appendix I). The establishment of forums for faculty development, specifically the core faculty seminars, the summer workshops, and the occasional University seminars, is recognized by the University

administration to be the MTS Program's most significant achievement.

The core faculty of the Program was established in 1974. As originally planned, it included a representative from the social sciences (Dr. Steven Puro, political science) and the natural sciences (Dr. Stephen Dina, biology), as well as representatives from the traditional humanities disciplines (Dr. Ronald DiLorenzo, English; Dr. Fredrick Dobney, history; Dr. Vincent Punzo, philosophy; and Dr. David Thomas, theology). Dr. Malcolm Warford, a theologian, replaced Dr. Thomas in 1975, when Dr. Thomas left the University. Dr. Warford himself left in 1976. Since 1976, the core faculty has been without a theologian, except for the 1978-79 academic year, when Mr. Frank Flinn, who had exceptional expertise in the Technology Studies area, joined the core faculty. He left the University in 1978. In 1976, Dr. Peter Zetterberg, who was hired for his expertise in the history of science/technology, joined the core faculty. With the exception of Dr. Thomas, Dr. Warford, and Mr. Flinn, all of whom left the University for positions elsewhere, the core faculty has been a stable group. Dr. Dobney has directed the Program since 1974. Dr. DiLorenzo was Assistant Director until 1977, when Dr. Zetterberg assumed these duties.

Since the fall of 1975, when, with receipt of the grant, the development phase of the Program began, the core faculty has met at least bi-weekly and often weekly throughout the academic year. Especially during the first two years, it was principally concerned with establishing and evaluating the MTS curriculum and certificate programs. Throughout the entire five year period,

however, and especially for the last three years, the core faculty meetings have also constituted a faculty seminar devoted to reading and discussion of significant books related to the MTS theme--for example, to name but a few, Herbert Muller, The Children of Frankenstein; Bernard Gendron, Technology and the Human Condition; Thomas Kuhn, The Structure of Scientific Revolutions; and William Barrett, The Illusion of Technique. In the fall of 1979 the core faculty viewed and discussed the Connections film series, as part of its group activity.

The value of the core faculty seminars cannot be overstated. They have provided a forum for a sustained dialogue among faculty across disciplinary lines. This dialogue has generated the necessary larger context within which each member of the core faculty pursues his separate teaching and research interests. It has also allowed for the development of rapport among core faculty members and instilled in each a strong commitment to the Program. Finally, the strength, stability, and commitment of the core faculty has insured the Program strong representation and advocacy in each division of the College of Arts and Sciences and major humanities departments. The achievements of the core faculty are a tribute to its members, each of whom has sacrificed disciplinary interests and development for work in MTS, without any assurance that such work would be adequately recognized with regard to professional standing, promotion, and salary.

All members of the core faculty have developed courses which they now teach regularly (see appendix B). Several have

also reoriented their research interests, for example, Dr. Dobney, whose book on the St. Louis District of the Corp of Engineers, River Engineers on the Middle Mississippi, was published in 1978; Dr. Zetterberg, who has published several articles on Renaissance science and tecnology, as well as given papers at such conferences as "Apollo Agonistes: The Humanities in a Computerized World" and "Interface '79," the annual meeting of the Humanities and Technology Association; and Dr. Punzo, who has published and lectured on such topics as Jacques Ellul's critique of technological society.

A core faculty textbook, as tentatively proposed in the original grant proposal, was a project abandoned in 19 8, after about a year's work. Since 1974, when proposed, a number of good, introductory texts have been published, all more or less similar to what had been planned, for example, Richard C. Dorf, Technology, Society and Man (San Francisco: Boyd and Fraser, 1974). Interest in the project waned as such books appeared. The Program has, however, printed substantial bibliographies for the Technology Studies certificate and the Technology, Communication, and Culture certificate. Bibliographies for the Technology and Human Health and Technology, the Future, and the Dynamics of Change certificates are both at various stages of completion. These are available to any interested party, upon request. They have been composed by Marilyn Huxsford and Benjamin Shearer, with the supervision of the core faculty.

The summer workshops, a second forum for faculty development in the MTS area, have all been successful. As in the core faculty seminars, discussion of significant books and articles has been used to establish the larger context for the development of new courses for the Program. The readings have included, again to name but a few, such works as Jacques Ellul's The Technological Society; Lewis Mumford's Technics and Civilization; B. F. Skinner's Beyond Freedom and Dignity; E. P. Thompson's The Making of the English Working Class; and David Noble's America by Design.

Each year grants have been awarded to four faculty for participation in a summer workshop and the development of new courses for the Program (see appendix J for a list of these faculty). For the first three years, course proposals were solicited from all interested faculty and the grants were awarded on the basis of the individual merit of the proposals, as determined by the core faculty. For the last two years, to fill holes in the curriculum and to insure that all departments are adequately represented, specific courses were proposed by the core faculty and grants awarded to those qualified and interested in developing and teaching them. Eighteen of the twenty courses developed are now being taught on a regular basis. Dr. Yerachmiel Kugel has left the University and Fr. Joseph Knapp has assumed a new, non-teaching position at the University, and hence, unfortunately, their courses are no longer taught.

All participants in the summer workshops agree that the experience has been a valuable one. They have provided a forum

for curricular development and cross disciplinary dialogue, a forum that was much needed. And those awarded grants for the development of new courses have become strong advocates of the Program.

The University seminars have been the least successful of the forums for faculty development. As originally planned, these have been held on average twice each year, and they have featured a lecture by someone from outside the University on an MTS related topic. Attendance, with a few exceptions, has been disappointing, and hence they have not served to stimulate a larger interest in MTS. The lecture by B. F. Skinner in 1977, which was sponsored by several groups on campus, including MTS, drew a large audience, and the lecture this February by Joseph Cortes, a Washington-based futurist and consultant on matters pertaining to technology assessment, was very well attended by both faculty and students in the Program. These are the exceptions, however. Although stimulating and informative for those who have attended these seminars, this forum for faculty development has not been as effective as anticipated in the grant proposal.

It was in part owing to the ineffectiveness of the University seminars that MTS in the fall of both 1978 and 1979 held a retreat at Tan-Tar-A in Osage Beach, Missouri (Lake of the Ozarks). These retreats have brought together 20-30 faculty and administrators to discuss the MTS Program and plan for its future. The last retreat provided an opportunity for many of the summer workshop participants to meet together again, as well. What the Program lacked and what

these retreats provided was an opportunity to bring faculty together who teach courses in the Program.

The forums for faculty development sponsored by the Program have established a solid foundation for MTS in the core faculty and provided direct support for twenty other faculty with teaching interests in the MTS area. In a conference for University undergraduate and graduate interdisciplinary programs last February, which was sponsored by Fr. Stauder, Dean of the Graduate School, the issue of faculty development was a central concern. The forums established by the MTS Program were recognized by all to be successful models to follow. The report of this conference is attached as appendix K.

Recruitment of students into the Program has been, throughout the five year period, a nagging problem. Ideally, students would simply gravitate to the Program because of their interest in its concerns. Realistically, it was realized from the outset that some recruitment would be necessary. We have avoided the temptation to be heavy-handed in our efforts to recruit students. We have, however, been very active in our efforts to disseminate information about the Program to all students, and to that end have developed brochures, posters, and made the best possible use of both the "Schedule of Courses," which is printed each semester (the fall, 1980 listing is included as appendix C), and the University Bulletin. We have also given presentations about the Program during freshmen orientation and in many classes. What we have lacked is a professionally printed document that describes the Program and also

individual courses in some detail.

Throughout the year Dr. Zetterberg has devoted most of his time, apart from teaching duties, to the preparation of such a document, the new MTS Booklet, several copies of which are enclosed with this report. He has gathered detailed course syllabi, including supplementary reading lists, which should be useful as initial bibliographies for instructors elsewhere interested in developing similar courses, put the information about each course into a standard form, slightly revised--and in the case of Technology, the Future and the Dynamics of Change, substantially revised--the curriculum of each certificate program, with the advice and counsel of the core faculty, and written the introductory material. The booklet was submitted to a printer in April and was finally printed in early May. We have waited until this year to have such a booklet printed so that it would be as complete a document as possible.

The new booklet, which will be distributed to all faculty and all interested students, including all students in MTS courses next fall, should help to bring new students into the Program.

The new booklet will also serve to disseminate information about MTS to all interested colleges and universities. Since NEH does hope that the programs which it funds will serve as models for curricular and faculty development elsewhere, we are trying to disseminate information about the Program as widely as possible. The booklet has already been sent to all schools that in the past five years have expressed an interest in the Program. It was also made available to the many schools that were represented at the

CUTHA conference at MIT in June, 1980, and we have placed announcements of its availability in The Chronicle of Higher Education and the newsletters of: The Society for the History of Technology; the Humanities and Technology Association; the STS Program at Lehigh; the Philosophy of Science Association; the Science, Technology, and Human Values Program at Harvard; and the History of Science Society. This announcement is included as appendix L. The booklet is available to any interested party, upon request. 5000 copies have been printed, which should be sufficient for at least the next two years. We have profited greatly from such booklets as that put out by the Technology and Culture Program at UW-Milwaukee, and we hope that the MTS Booklet similarly will be of value to those interested in either the MTS/STS area or models for curricular development.

Evaluation of the MTS Program has been constant and on-going throughout the five year development phase, with the core faculty and teams of outside consultants shouldering the major responsibility. The Advisory Board has met only once, in 1978, when they approved both Program activities during the first three years and plans for the last two.

With rare exception, regular meetings of the core faculty have always included discussion of this or that aspect of the Program, be it a particular course, improvement of the certificates, planning for a summer workshop, and so forth. The outcome of all such informal review and reflection has been formally recorded in the annual reports.

Annual visits by teams of outside consultants have been

occasions for the core faculty and also administrators with whom the consultants have met to engage in a more serious evaluation of the Program at each year's stage of development. Dr. Paul Durbin, Professor of Philosophy at the University of Delaware, and Dr. Raymond Merritt, Professor of History at the University of Wisconsin-Milwaukee, both of whom have experience in programs funded by NEH, have visited the Program three times, in 1977, 1978, and 1979. At the request of NEH, two different consultants visited the Program in the spring of this year: Dr. Arthur Pfeffer, Professor of English at John Jay College, CUNY; and Dr. Carroll Pursell, Professor of History at the University of California-Santa Barbara. All of their reports are attached as appendix M, along with the report of the NEH site visit team, which visited the Program in the fall of 1979. In that report, Nancy Rogers requested that this final report include an outline of our responses to the following recommendations:

> (1) that efforts be made to see that MTS courses are cross-listed in such areas as nursing and communications in order to increase publicity; (2) that clear, legible syllabi (not course descriptions) and faculty course evaluations be gathered by the program office for use by future professors in the program; (3) that written records be kept both of the on-going faculty seminar and of the fall retreat; (4) that efforts be initiated now to secure written commitment for the continuing of funding after the first post-grant year--enrollment statistics should be particularly persuasive to the new President, Academic Vice-President, and Dean for funding of the program at approximately $30,000 per year; and (5) that initiatives for meeting pre-professional students be implemented (such as meeting with pre-med students during "Welcome Week").

She also requested that this report include a summary of activities planned for 1980-81 and of the prospects for the Program after that

year. After responding to the specific recommendations, we will conclude the report with an analysis of the Program's near and long range future.

Courses can only be cross-listed in another department if they can be taken for credit in that department. For the last five years MTS courses have been listed together in a special section of the "Course Schedule," where all University students will have access to the information (see, for example, appendix C), and also listed separately in the appropriate departmental listings. With regard to publicity, which is the concern in both the first and fifth recommendations, we will ask those who advise pre-professional students in such areas as medicine, nursing, and business to distribute copies of the MTS Booklet along with the other information that they disseminate to their students. We will also arrange to meet with such pre-professional clubs as the pre-med group.

The implied criticism in the second and third recommendations is well taken. We have been negligent in keeping written records of certain of the Program's activities. Syllabi for all MTS courses have been gathered (see appendix A). These include all relevant information about each course, namely a description, a statement of objectives, and listings of major themes and lecture topics, audio-visual materials, required reading, and supplementary reading. As each course is taught in the next two or three semesters, we will ask for faculty evaluations. The concrete results of both retreats have been recorded in specific written recommendations to appropriate committees (e.g. Zetterberg's proposal to the Ad Hoc Committee for the Review of Curriculum K, which is discussed in last year's annual

report) and recommendations to appropriate University administrators (e.g. Zetterberg's proposal for a Center for Interdisciplinary Studies and Special Programs in Arts and Sciences and Dobney's proposals for an MTS Budget for 1980-81, which were submitted to Dean Knipp following the 1978 retreat). Notes have been kept of decisions made in the core-faculty meetings regarding Program development, and this information has been formally recorded each year in the annual reports. We have not kept a written record of our discussions of the common reading, nor do we see of what value such a record would be. Each core faculty member and summer workshop participant has instead, as is normal in any seminar, been responsible for taking their own reading and discussion notes.

With regard to the fourth recommendation, we began our efforts to secure funding of the Program for 1980-81 long before the site visit. Following the fall retreat in 1978, Dr. Dobney submitted to Dean Knipp three budget proposals, ranging from $10,000 to $30,000, over and above released time. These were submitted in anticipation of Dean Knipp's negotiations with the Academic Vice President about the 1980-81 budget for the College of Arts and Sciences. These negotiations have not gone well, in large part because this crucial year for MTS was a transitional year for the University administration. Dean Knipp was in his last year, having announced his intention to resign in May of 1979, and both Rev. John H. Gray, S.J., Academic Vice President, and Rev. Thomas R. Fitzgerald, S.J., President, were in the first year of their appointments.

Fr. Gray and Fr. Fitzgerald do not have their predecessors' interest in and commitment to the Program. We have done our best to inform them of the Program's history, activities, and future plans. Dr. Dobney, for example, met with Fr. Gray early in September, just after he had assumed his new duties. Later that month, Dr. Zetterberg arranged a meeting with Fr. Gray and other certificate program directors. Both Fr. Gray and Fr. Fitzgerald have been sent copies of the grant proposal and other information regarding the Program's certificates and courses. Both were invited to the fall retreat, which neither, unfortunately, was able to attend. Both have met with the site visit team and also Dr. Pfeffer and Dr. Pursell. Finally, the core faculty had a long meeting with Fr. Gray early in the spring semester and Dr. Zetterberg has met with him several times since then, most recently in May, following the spring term, when the Program still was without a budget for the 1980-81 academic year.

We had assumed that Dean Knipp had been successful in negotiating with Fr. Gray for an MTS budget. Fr. Gray had spoken of $30,000 for MTS to both the NEH site visit team and also Dr. Pfeffer and Dr. Pursell. That figure is mentioned in both reports (appendix M), as well as in Fr. Gray's letter to Dr. Dobney of 29 January, 1980, which is attached as appendix N with several other items in Fr. Gray's correspondence with the Program. We discovered in February, following the visit of Dr. Pfeffer and Dr. Pursell, that no funds for MTS whatsoever were included in the final budget proposal for Arts and Sciences. The core faculty met with Fr. Gray

about this decision and was told that Fr. Fitzgerald had instructed him to delete any funding for MTS. Funding for other programs had also been reduced or eliminated and staff reduced as part of stringent measures taken to reduce the University's operating budget. When informed that the University was obligated to fund the 1980 summer workshop, Fr. Gray, after meeting with Dr. Dobney, Dean Knipp, and also Dr. Donald Sprengel, who directs the Office of Research Administration, did agree to include $14,975 in the 1980-81 budget to cover the costs of the workshop.

The decision regarding a budget for MTS met with a rather heated reaction, as recorded in several articles and letters in the U-News (appendix C). The situation was aggravated by Fr. Fitzgerald's decision to terminate Dr. Zetterberg's appointment following the 1980-81 academic year, despite his approval of the recommendation of the University Committee on Academic Rank and Tenure that Dr. Zetterberg be promoted to Associate Professor of History, a rank which normally carries tenure.

In December of 1979 the Department of History was notified by Fr. Gray that one of its positions would have to be eliminated following the 1980-81 academic year for budgetary reasons. Fr. Gray suggested that it would probably be best to terminate Dr. Zetterberg's appointment, because he was originally hired, in part, on "soft money" (i.e., part of his salary has been supported by the NEH grant). The Department instead arranged for the retirement of a senior member. Fr. Gray approved this arrangement and stated in a

letter to the Department in January that no other position would have to be terminated. The decision to terminate Dr. Zetterberg hence caught the Department as well as MTS by surprise, coming as it did after Fr. Gray's letter and the recommendation of the University Committee on Academic Rank and Tenure that Dr. Zetterberg be promoted and given tenure. The Department of History and MTS have protested the decision, without success. Dr. Zetterberg has filed a formal appeal, but there is very little chance that the decision will be reversed.

Frustrated by the decision not to fund the MTS Program, Dr. Dobney resigned in March, for reasons given in his letter of resignation to Fr. Fitzgerald, which, with Fr. Fitzgerald's response, is attached as appendix P. The core faculty has requested that Dr. Zetterberg be appointed to direct the Program next year, even though he will only be able to do it for that one year. Both Fr. Gray and Dean Knipp have approved his appointment. He will be given 1/3 released time to direct the Program, but no stipend.

In a final report to the Executive Council of the College of Arts and Sciences on the MTS Program's development, which included distribution of the MTS Booklet and the budget summary attached as appendix I, our failure to secure even a small budget for operation of the Program during the 1980-81 academic year was reviewed. The Executive Council was very concerned and, as reported in the minutes which are attached as appendix Q, has asked Fr. Gray to explain the decision not to fund MTS at its first meeting next fall.

Fr. Gray has already responded (see appendix Q), and his response reflects the agreement reached with Dr. Zetterberg in May, shortly after the Executive Council session.

In an attempt to make the best of a bad situation, Dr. Zetterberg requested a meeting with Fr. Gray on May 19 to determine what, if anything, was the University's financial commitment to the Program. Fr. Gray made it clear in the meeting that he is interested in supporting MTS and interdisciplinary studies in general, citing his approval of the Interdisciplinary Studies office. Financial resources, however, are limited. He did concede, nonetheless, that MTS deserved some funding at least, no matter how modest, over and above the $14,975 for the 1980 summer workshop. He has promised to fund an MTS account at the level of $1000, and he and Dr. Zetterberg both agree that 1/3 of Zetterberg's salary (the amount of released time granted for directing the Program) and also 1/6 of the money allocated the Interdisciplinary Studies Office (the MTS share) for clerical and staff assistance should be reported as legitimate parts of the University's financial commitment to the Program, which is then $23,375, broken down as follows:

1980 SUMMER WORKSHOP.....	$14,975
RELEASED TIME FOR A DIRECTOR (1/3 @ $15,900 plus fringe benefits)....	5,900
CLERICAL AND STAFF ASSISTANCE FROM THE INTERDISCIPLINARY STUDIES OFFICE (1/6 @ $9,000).....	1,500
MTS ACCOUNT:	
POSTAGE.....	200
TELEPHONE.....	25
OFFICE SUPPLIES.....	100
XEROX.....	50
FACULTY SEMINAR.....	125
TRAVEL.....	500
TOTAL....	$23,375

Overhead for the operation and maintenance of two offices, when added to the amount, does bring the total to about $30,000. MTS is being moved from the five offices that it currently has in DuBourg Hall probably to two offices in Ritter Hall near the Interdisciplinary Studies Office. Fr. Gray and Dr. Zetterberg agree that the University's financial commitment to MTS beyond 1980-81 will probably be in the range of $8,000-$10,000, since the MTS summer workshops will no longer be funded at anywhere near the same level, if at all.

The largest budget request submitted to Dean Knipp in the spring of 1979, $30,000, included funds for a summer workshop, a half-time secretary, a small stipend for a half-time Program director, and slightly larger amounts for each item in the MTS account above. It did not include the released time for the director and fringe benefits, which would have put the total at $40,000. The $20,000 proposal reduced each item proportionately. In the $10,000 proposal, funding for a summer workshop was eliminated. Beyond 1980-81, the MTS budget will hence most likely resemble our original $10,000 proposal, except that there will be no stipend for the director, which is not significant, and secretarial assistance will be provided through the Interdisciplinary Studies Office, an arrangement which should be satisfactory.

The protracted and sometimes bitter negotiations for an adequate budget for 1980-81, coupled with Dr. Dobney's resignation and the decision to terminate Dr. Zetterberg's appointment, have disrupted planning for next year and beyond and have also had a

rather demoralizing effect on the rest of the core faculty. With regard to this activity, we would stress that other University programs and also some departments have struggled through similar situations this year, which, with the transition in administration, has been a difficult one for the University. Fortunately the 1980 summer workshop has provided the core faculty with an opportunity to regroup and to focus again on both the near and long range future of the Program.

With regard to the short range future, our agenda is clear. We will pursue the activities outlined above in our response to the recommendations of the NEH site visit team. And we will give careful thought to the selection of a successor to Dr. Zetterberg.

We also plan to invite all interested MTS faculty to join the core faculty and participate in the core faculty seminars. These seminars will now focus each semester on a specific topic related to one of the four certificates. The topic for the fall semester will be "Biomedical Ethics," and we will invite especially the participation of MTS faculty who offer courses for the Technology and Human Health certificate. Meetings will be biweekly; reading will include three or four significant books, as selected by the group. The topic for the spring semester will be "Technology and the Idea of Progress," and we will invite especially the participation of MTS faculty who offer courses for the Technology, the Future, and the Dynamics of Change certificate.

Crucial to the Program's integrity is the fostering and maintenance of a group identity among faculty involved in each of

the four certificates. Topical faculty seminars seem to us to be the best approach. These seminars will also enable us to sustain a cross-disciplinary dialogue about significant issues and continued faculty development and growth in interdisciplinary areas.

Our longer range plan for the future includes continuation of next year's activities. We will also actively involve ourselves in any larger reform of the curriculum of the College of Arts and Sciences that would make possible the establishment of an interdisciplinary humanities course as an introduction to the Program. Beyond that we foresee no change in the MTS curriculum other than what is normal with any curriculum, as courses are occasionally added or dropped or taught by different instructors. The MTS Program and its curriculum have grown rapidly over the last five years. What is appropriate now are activities designed to consolidate and to strengthen what has been established.

The MTS Program has experienced its share of disappointments and setbacks throughout the five year development phase. We would emphasize in conclusion, however, its positive achievements. As originally conceived, it has made the study of technological society a major focus of the undergraduate curriculum. It has, in the certificates, provided opportunity for the integration of University core requirements. It has, again in the certificates, provided opportunity and a workable structure for the pursuit of multidisciplinary and thematic, as opposed to disciplinary, study. And it has been successful in developing forums for faculty development.

Beyond these specific achievements the Program in its entirety now serves as a model for curricular and faculty development, not only for similar programs at other colleges and universities, but also, within the University, for those programs under the umbrella of the new Interdisciplinary Studies Office. None of this would have been possible without the support provided by the National Endowment for the Humanities.